R10 Glovebox Technique

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Asbestos Site Evaluation, Communicaiton and Cleanup

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What is it?

- Glovebox technique used to determine if a matrix that contains asbestos will release fibers when that matrix is disturbed

- Glovebox technique first used by R10 during vermiculite garden products study in 2000

Why the Glovebox?

- R10 needed a quick and inexpensive method to determine whether asbestos in vermiculite or soil would become airborne when disturbed

What is the Glovebox?

Glovebox Specs

- Kewaunee Scientific Equipment

  – 4ft long, 3 ft high, 21 - 27 inches deep

  – volume approximately 680 liters

  – stainless steel w/ glass front

  – three portals to insert gloves

  – one large opening on side

Air Monitoring Equipment Used in Glovebox

- 2 Allegro A100 high volume sampling pumps

    - air monitoring cassettes connected to pumps with tygon tubing

    - make-up air supplied through tygon tubing

What did it look like?

What was the process?

- Soil samples collected from asbestos contaminated site

- Some samples dried

- Samples placed in glovebox and sieved

- Samples agitated until dust was visible
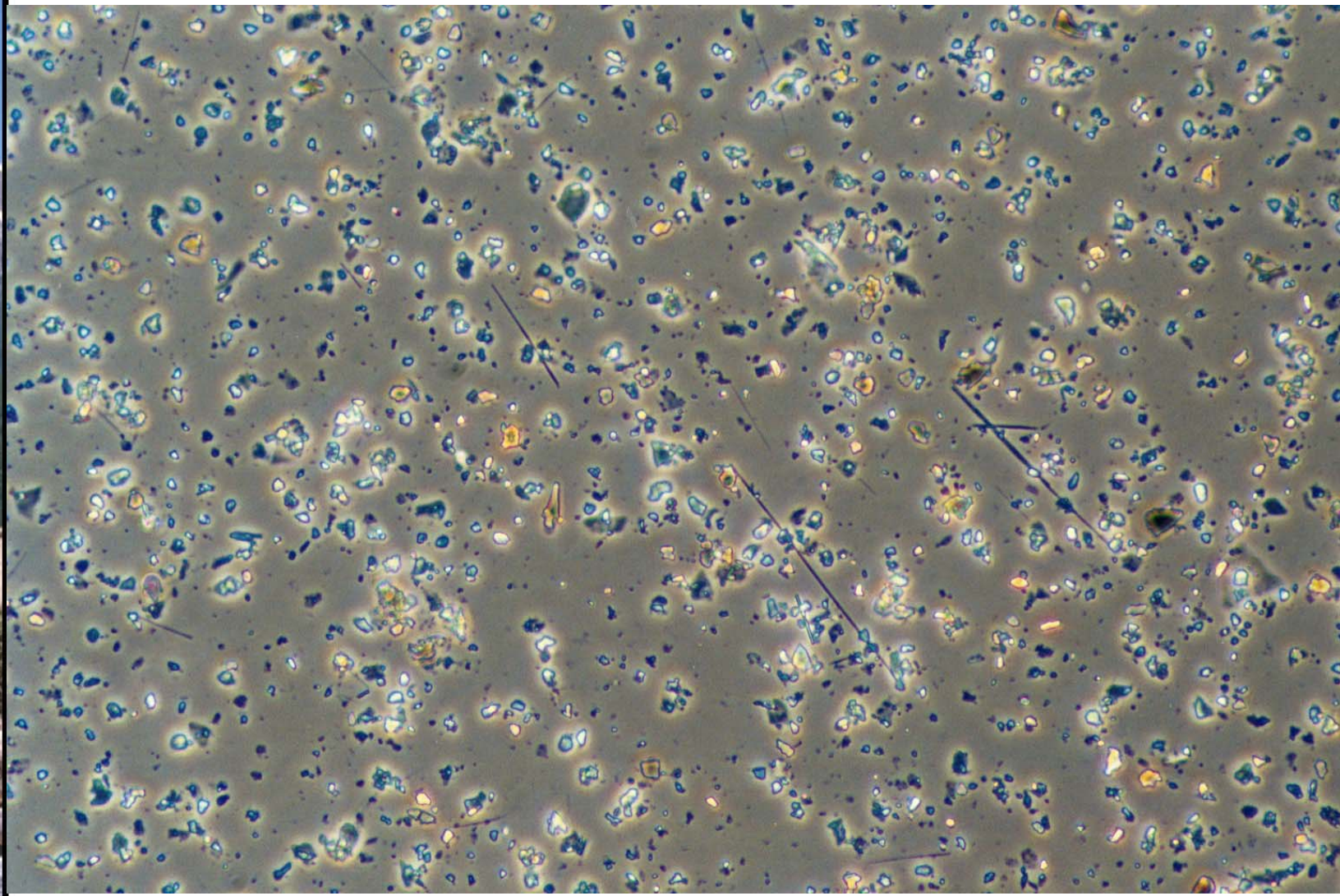
- Air samples collected after agitation

More Process

- Optimum loading of filter cassettes determined by PCM

  – duration and flow of air sampling

    - 12 minutes @ 2.5 - 3.5 liters/min

  – waiting time after agitation of samples

    - one hour

More Process

- Duplicate set of samples collected under optimum flow and duration and analyzed using TEM

Advantages of Glovebox

- The price was right - surplus equipment

- Airtight - potential exposure to asbestos minimized

- Easy to equip with tubing and pumps

Disadvantages of Glovebox

- Difficult to clean

    - HEPA vac after each sample

    - rinse with deionized water

    - dry with fiber free wipes

    - time consuming

Why We Like
the R10 Glovebox

- Tells us quickly whether fibers present in samples become airborne

Glovebox Limitations

- Artificial conditions not necessarily representative of "real world" exposures